



STUDIES

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Death Among North Carolina's Children and Youth

by

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Of all human events, probably none is more disturbing than the death of a child. Thus, it is the intention of the Division of Health Services to monitor and report those events at regular intervals in the hope that increased awareness will result in appropriate intervention. A special focus of the present report is poor children, specifically, those whose families receive AFDC—Aid to Families with Dependent Children.

For the period 1974-78, a previous report (1) examined leading causes of death and specific types of accidental death among age groups under 20. Except for infants under 1 year of age, accidents were the leading cause of death in each age group with motor vehicle fatalities, drownings, and death by fire leading the list of specific types. Nonwhite and male youths were particularly prone to accidental death, and for leading categories of accidents, the state's fatality rates were found to be substantially higher than the nation's.

For age groups under 20 and for all ages 1-19, Table 1 provides numbers and rates for leading causes of death during 1979-82 with percent changes since 1974-78. In general, the percent changes are not biased by cause-of-death classification changes (see footnotes 4 and 9 of the table).

By and large, the data of Table 1 are encouraging, particularly at ages below 15. While corresponding U.S. data are not available beyond data year 1978, the downturns depicted in Table 1 suggest that N.C. rates may be approaching the lower national rates, particularly in the case of motor vehicle fatalities among younger

children and congenital anomalies at ages greater than one. For all ages under 20, the death rate for pneumonia and influenza has also dropped substantially, by about 50 percent between 1974-78 and 1979-82. Unfortunately, the state's infant homicide rate more than doubled and the suicide and heart disease rates at ages 15-19 each increased by about one-fifth between the two time periods studied. Just between 1981 and 1982, the number of suicides per 1,000 residents rose 30 percent, from 8.7 (48 deaths) to 11.3 (60 deaths). White males accounted for a preponderance of the increase and constituted 71 percent of the state's teenage suicides in 1982.

Between 1981 and 1982, the state's infant mortality rate also rose, for the first time since 1978. The 4 percent increase, to 13.7 deaths per 1,000 live births, was due largely to an increase in the nonwhite neonatal death rate which itself rose 15 percent. Based on a study currently in progress, the increase largely involved nonwhite mothers who would **not** be considered at high risk on the basis of their age, education, parity, or previous pregnancy outcomes.

In addition to the leading-cause categories of Table 1, trends in cystic fibrosis (CF) and leukemia mortality have been examined. Between 1974-78 and 1979-82, the CF death rate for residents under age 20 dropped 44 percent while the leukemia death rate for those ages dropped 16 percent. A previous study of leukemia mortality (2) revealed notable reductions in the lymphoid rate among younger children (0-9) and the myeloid rate among older youth (10-19).

Table 1
1979-82 Deaths and Death Rates for Leading Causes by Age
With Percent Changes in Rates Since 1974-78
North Carolina Residents Under Age 20

Underlying Cause ¹	1979-82		Percent Change In Rate Since 1974-78 ³	Underlying Cause ¹	1979-82		Percent Change In Rate Since 1974-78 ³
	No.	Rate ²			No.	Rate ²	
Under 1 Year				Ages 10-14			
Total Deaths	4,768	1453.4	-18.9	Total Deaths	640	33.4	-17.1
Perinatal Conditions ⁴	2,465	751.4	-20.2	Accidents	343	17.9	-19.7
Congenital Anomalies ⁵	898	273.7	-0.8	Motor Vehicle ⁷	195	10.2	-11.3
Sudden Infant Death Syndrome ⁶	600	182.9	-3.1	Other ⁸	148	7.7	-29.4
Accidents	107	32.6	-36.9	Cancer ¹¹	71	3.7	-2.6
Motor Vehicle ⁷	17	5.2	-57.0	Congenital Anomalies ⁵	32	1.7	-15.0
Other ⁸	90	27.4	-31.0	Heart Disease ¹²	21	1.1	-26.7
Pneumonia and Influenza ⁹	83	25.3	-55.5	Homicide ¹⁰	15	0.8	-33.3
Homicide ¹⁰	30	9.1	+133.3	Suicide ¹³	14	0.7	-30.0
Ages 1-4				Ages 15-19			
Total Deaths	817	62.9	-18.7	Total Deaths	2,166	98.1	-9.9
Accidents	350	26.9	-16.7	Accidents	1,326	60.1	-13.4
Motor Vehicle ⁷	140	10.8	-23.9	Motor Vehicle ⁷	1,014	45.9	-5.9
Other ⁸	210	16.2	-10.5	Other ⁸	312	14.1	-31.6
Congenital Anomalies ⁵	105	8.1	-21.4	Suicide ¹³	203	9.2	+21.1
Cancer ¹¹	46	3.5	-31.4	Homicide ¹⁰	170	7.7	-7.2
Homicide ¹⁰	32	2.5	+13.6	Cancer ¹¹	123	5.6	+1.8
Pneumonia and Influenza ⁹	31	2.4	-45.5	Heart Disease ¹²	55	2.5	+19.0
Heart Disease ¹²	24	1.8	-21.7	Congenital Anomalies ⁵	32	1.4	-17.6
Ages 5-9				Ages 1-19			
Total Deaths	536	30.1	-25.3	Total Deaths	4,159	57.8	-14.4
Accidents	265	14.9	-31.7	Accidents	2,284	31.7	-16.6
Motor Vehicle ⁷	164	9.2	-30.8	Motor Vehicle ⁷	1,513	21.0	-10.6
Other ⁸	101	5.7	-33.7	Other ⁸	771	10.7	-26.2
Cancer ¹¹	87	4.9	-7.5	Cancer ¹¹	327	4.5	-8.2
Congenital Anomalies ⁵	31	1.7	-19.0	Homicide ¹⁰	228	3.2	-5.9
Pneumonia and Influenza ⁹	11	0.6	-33.3	Suicide ¹³	219	3.0	+20.0
Homicide ¹⁰	11	0.6	-0.0	Congenital Anomalies ⁵	200	2.8	-20.0
Heart Disease ¹²	11	0.6	-33.3	Heart Disease ¹²	110	1.5	-11.8

¹Ninth Revision International Classification of Diseases (ICD) categories; footnotes 4-13 give the ICD codes and document major differences between the 1974-78 and 1979-82 categories. ²Deaths per 100,000 population. ³Percent changes reflect improved population estimates such that 1974-78 rates were slightly different from those previously published. ⁴760-779; includes congenital pneumonia whereas 1974-78 rate excluded this entity. ⁵740-759. ⁶798.0. ⁷810-825. ⁸800-807,826-949. ⁹480-487; excludes congenital, aspiration, and acute interstitial pneumonia whereas 1974-78 rate included these entities. ¹⁰960-978. ¹¹140-208. ¹²390-398, 402, 404-429. ¹³950.959.

Table 2
1979-82 Deaths and Death Rates for Leading Causes by Age and Race
North Carolina Residents Under Age 20

Underlying Cause ¹	Race				Underlying Cause ¹	Race			
	White		Nonwhite			White		Nonwhite	
	No.	Rate ²	No.	Rate ²		No.	Rate ²	No.	Rate ²
Under 1 Year					Ages 10-14				
Total Deaths	2,562	1135.0	2,204	2154.2	Total Deaths	442	32.9	198	34.6
Perinatal Conditions ³	1,210	536.0	1,255	1226.6	Accidents	236	17.6	107	18.7
Congenital Anomalies ⁴	627	277.8	270	263.9	Motor Vehicle ⁶	143	10.6	52	9.1
Sudden Infant Death Syndrome ⁵	311	137.8	289	282.5	Other ⁷	93	6.9	55	9.6
Accidents	59	26.1	48	46.9	Cancer ¹⁰	47	3.5	24	4.2
Motor Vehicle ⁶	13	5.8	4	3.9	Congenital Anomalies ⁴	27	2.0	5	0.9
Other ⁷	46	20.4	44	43.0	Heart Disease ¹¹	12	0.9	9	1.6
Pneumonia and Influenza ⁸	42	18.6	41	40.1	Homicide ⁹	12	0.9	3	0.5
Homicide ⁹	9	4.0	21	20.5	Suicide ¹²	14	1.0	0	0.0
Ages 1-4					Ages 15-19				
Total Deaths	462	51.6	355	87.9	Total Deaths	1,659	105.8	507	79.2
Accidents	199	22.2	151	37.4	Accidents	1,079	68.8	247	38.0
Motor Vehicle ⁶	83	9.3	57	14.1	Motor Vehicle ⁶	856	54.6	158	24.7
Other ⁷	116	13.0	94	23.3	Other ⁷	223	14.2	89	13.9
Congenital Anomalies ⁴	66	7.4	39	9.7	Suicide ¹²	177	11.3	26	4.1
Cancer ¹⁰	37	4.1	9	2.2	Homicide ⁹	82	5.2	88	13.7
Homicide ⁹	14	1.6	18	4.5	Cancer ¹⁰	94	6.0	29	4.5
Pneumonia and Influenza ⁸	16	1.8	15	3.7	Heart Disease ¹¹	32	2.0	23	3.6
Heart Disease ¹¹	10	1.1	14	3.5	Congenital Anomalies ⁴	26	1.7	6	0.9
Ages 5-9					Ages 1-19				
Total Deaths	344	27.8	192	35.4	Total Deaths	2,907	57.7	1,252	58.0
Accidents	149	12.1	116	21.4	Accidents	1,663	33.0	621	28.8
Motor Vehicle ⁶	92	7.4	72	13.3	Motor Vehicle ⁶	1,174	23.3	339	15.7
Other ⁷	57	4.6	44	8.1	Other ⁷	489	9.7	282	13.1
Cancer ¹⁰	66	5.3	21	3.9	Cancer ¹⁰	244	4.8	83	3.8
Congenital Anomalies ⁴	26	2.1	5	0.9	Homicide ⁹	115	2.3	113	5.2
Pneumonia and Influenza ⁸	9	0.7	2	0.4	Suicide ¹²	192	3.8	27	1.3
Homicide ⁹	7	0.6	4	0.7	Congenital Anomalies ⁴	145	2.9	55	2.5
Heart Disease ¹¹	8	0.6	3	0.6	Heart Disease ¹¹	62	1.2	48	2.2

¹Ninth Revision International Classification of Diseases (ICD) categories. Footnotes 3-12 give the ICD codes. ²Deaths per 100,000 population. ³760-779. ⁴740-759. ⁵798.0, ⁶810-825, ⁷800-807, ⁸826-949. ⁹480-487. ¹⁰960-978. ¹¹140-208. ¹²390-398, 402, 404-429. ¹³950-959.

Variations by Race

The previous study of death among North Carolina's youth (1) revealed that, for total deaths and all categories of accidents, male death rates exceeded female rates, usually by a substantial margin. For example, the ratios of male rates to female rates were 1.5 for total causes, 2.3 for motor vehicle accidents, and 2.8 for other accidents with males experiencing five- and sixfold rates in the case of accidental death by drowning, by firearms and by water-transport and electric-current incidents.

The previous study (1) also revealed some marked race differentials in mortality at young ages; for example, the ratios of nonwhite to white rates for all ages under 20 were 1.6 for total causes and 1.7 for non-motor-vehicle accidents with nonwhite youths experiencing a fourfold rate for death by fire and twofold rates for death from drowning, falls, and strangulation by ingestion. At the same time, white youths experienced higher mortality from motor vehicle and firearms accidents. Fortunately, both races and especially nonwhites have experienced substantial improvements resulting in generally lower race-specific rates and reductions in the differences between races. However, the difference in race-specific rates remains wide in some instances.

For the cause and age categories detailed in Table 1, white and nonwhite rates during 1979-82 are given in Table 2 (page 3). These data reveal the following major differences between the state's white and nonwhite residents below age 20:

- At younger ages, nonwhite death rates far exceeded the white rates for perinatal conditions (e.g., prematurity and respiratory distress), sudden infant death syndrome (SIDS), non-motor-vehicle accidents, pneumonia/influenza, and homicide.
- The nonwhite homicide rate was 5 times the white rate among infants and more than double the white rate among teenagers 15-19.
- The white motor vehicle death rate was more than twice the nonwhite rate among teenagers 15-19.
- White suicide rates far exceeded the nonwhite rates.
- Nonwhites experienced higher mortality from heart disease.

In addition to deaths by motor vehicle, other accidental deaths represent a particular concern of North Carolina's health community. For selected types of accidental death among the state's youthful population, total and race-specific deaths and death rates during 1979-82 are provided in Table 3. While most of these rates represent improvements over 1974-78 levels (1), excesses remain—particularly in the case of nonwhite deaths by drowning and by fire.

Table 3
1979-82 Deaths and Death Rates for Selected
Accidental Causes by Race
North Carolina Residents Under Age 20

Accidental Cause ¹	Total		Whites		Nonwhites	
	No.	Rate ²	No.	Rate ²	No.	Rate ²
Total Non-motor-vehicle Accidents ³	861	11.4	535	10.2	326	14.4
Drowning ⁴	278	3.7	173	3.3	105	4.6
Fires ⁵	186	2.5	82	1.6	104	4.6
Firearms ⁶	65	0.9	48	0.9	17	0.8
Mechanical Suffocation ⁷	44	0.6	29	0.6	15	0.7
Poisoning by Solid/Liquid Substances ⁸	43	0.6	28	0.5	15	0.7
Falls ⁹	35	0.5	24	0.5	11	0.5
Inhalation/Ingestion Causing Obstruction ¹⁰	28	0.4	17	0.3	11	0.5

¹Ninth Revision International Classification of Diseases (ICD) categories. Footnotes 3-10 give the ICD codes. ²Deaths per 100,000 population. ³800-807, 826-949. ⁴910. ⁵890-899. ⁶922. ⁷913. ⁸850-869. ⁹880-888. ¹⁰911-912.

Table 4

**1979-82 Death Rates¹ for Selected Leading Causes by Health Service Area by Race
North Carolina Residents Under Age 20**

Residence and Race	Underlying Cause of Death ²								
	Total Deaths	Motor Vehicle Accidents ³	Other Accidents ⁴	Congenital Anomalies ⁵	Cancer ⁶	Homicide ⁷	Suicide ⁸	Heart Disease ⁹	Pneumonia/Influenza ¹⁰
North Carolina									
Whites	103.9	22.5	10.2	14.7	4.7	2.3	3.6	2.0	1.6
Nonwhites	152.8	15.2	14.4	14.4	3.7	5.9	1.2	3.9	2.9
HSA									
Western									
White	102.6	21.2	9.5	12.5	5.6	2.2	2.8	1.8	2.0
Nonwhite	155.0	13.3	11.0	14.1	2.3	7.8	0.8	1.6	5.5
Piedmont									
White	98.1	21.3	10.7	15.3	5.0	2.1	5.2	2.4	1.2
Nonwhite	118.5	13.7	12.5	11.9	3.9	4.5	1.2	3.6	0.9
So. Piedmont									
White	102.6	23.7	9.3	14.1	4.4	2.3	3.9	2.2	1.4
Nonwhite	154.6	9.7	10.6	16.5	5.0	6.9	0.9	4.7	2.8
Capital									
White	97.0	20.5	8.8	16.0	3.8	2.6	3.6	2.3	0.6
Nonwhite	163.4	14.2	15.3	12.7	3.1	7.1	1.7	3.1	2.8
Cardinal									
White	112.5	25.3	12.4	12.8	4.7	2.6	3.1	1.4	1.9
Nonwhite	158.5	19.0	17.7	14.8	3.0	5.3	0.9	4.4	2.7
Eastern									
White	112.7	23.9	10.6	18.2	4.1	2.0	3.0	1.8	2.4
Nonwhite	159.4	16.6	14.9	15.2	4.2	5.5	1.3	4.2	3.7

¹Deaths per 100,000 population. ²Ninth Revision International Classification of Disease (ICD) categories. Footnotes 3-10 give the ICD codes. ³810-825. ⁴800-807, 826-949. ⁵740-759. ⁶140-208. ⁷960-978. ⁸950-959. ⁹390-398, 402, 404-429. ¹⁰480-487.

Variations by Health Service Area and Race

For selected causes of death among residents under age 20, Table 4 provides race-specific death rates for the state's six Health Service Areas (HSAs). Here, selected causes are the leading causes of non-infant deaths under age 20. These data reveal the following patterns of mortality among the state's youthful population:

- For total deaths, no white or nonwhite HSA rate exceeded the corresponding state rate by as much as ten percent. However, the highest HSA white rate exceeded the lowest by 16 percent and the highest HSA nonwhite rate exceeded the lowest by 38 percent. In fact, compared to a nonwhite rate of 118.5 in the Piedmont HSA, nonwhite rates in **every other** HSA were a least 30 percent higher. Each of these differences is statistically significant.
- Based on comparisons among HSAs and to the state as a whole, the following **excesses** appear most notable:

HSA	Race	Cause of Death
Western	Nonwhite	Homicide & pne./infl.
Piedmont	White	Suicide
So. Piedmont	Nonwhite	Cancer and heart disease
Capital	Nonwhite	Homicide and suicide
Cardinal	White & Nonwhite	Accidents
Eastern	White Nonwhite	Cong. anomalies & pne./infl. Pneumonia/influenza

- Comparisons among the twelve race-specific HSA rates for total deaths reveal that the **lowest** nonwhite rate (118.5) exceeded the **highest** white rate (112.7).

Concerning the below-average mortality of nonwhite Piedmont youth, both age distribution and lower age-specific death rates were contributing factors. A low birth rate resulted in fewer Piedmont youth being exposed to the relatively high risk of death in infancy. At the same time, when compared to corresponding state rates, 1978-82 death rates among infants and other young age groups favored the Piedmont nonwhite by 20 percent or more. (3)

Consistent with the above, the Piedmont HSA's white and nonwhite fetal, neonatal, postneonatal, and total 0-4 mortality were all below average during 1978-82. Considering that rates of prematurity and illegitimacy were not below average in this area, reasons underlying the Piedmont advantage are unclear. It is noted, however, that the advantage involved some Piedmont counties far more than others and that the Piedmont's rank among HSAs worsened in 1982 when rates for very young Piedmont residents all rose—the white and nonwhite infant death rates by 12 and 64 percent respectively. (3)

AFDC Children vs. Others

This aspect of the present study purports to assess, on a race-specific basis, the degree of association between poverty and childhood mortality. Lacking a more suitable indicator of poverty, participation in the Aid to Families with Dependent Children Program (including Medicaid, based on AFDC eligibility) is used as a surrogate because a registry of those children is available at the state level. A similar study in Maine (4) also used food stamp files, but in North Carolina, those are available only at the county level.

AFDC is a joint federal/state/local money-payment program for families with documented need. To qualify, a child must be deprived of parental support or care because of the death, continued absence from the home, or physical or mental incapacity of a parent and must live with a specified relative. The child's family

group must meet North Carolina's AFDC income and needs standards including restrictions on reserves such as bank accounts and property. If 16 or 17, the child must be a full-time student in high school or its equivalent or be registered for work. This program is administered through the North Carolina Division of Social Services and local departments of social services.

For this study, death certificates for 1,082 children 28 days through 17 years who died during FY 1982 were matched with AFDC and AFDC-Medicaid files to determine AFDC status at the time of death (see Acknowledgement). The AFDC caseload on January 20, 1982 was then used to determine AFDC death rates specific for age group, race, and underlying cause of death. Deaths under 28 days were not included because the short time between birth and death probably precluded the enrollment in AFDC of some eligible children.

The death rates of Table 5 reveal much higher mortality among AFDC children than among the non-AFDC population 28 days to 17 years of age. This is especially true for whites among whom AFDC death rates are generally 3 to 4 times the non-AFDC death rates with the widest differentials occurring among infants and older children. Moreover, white death rates are found to exceed nonwhite rates for AFDC children of all ages except 1-4. The white excess appears especially pronounced among AFDC children 15-17.

Table 5
FY 1982 AFDC Deaths¹ and Death Rates Showing Non-AFDC and Total Death Rates by Race and Age
North Carolina Residents 28 Days to 17 years of Age

Age	All Races				AFDC Deaths	Whites			AFDC Deaths	Nonwhites		
	AFDC Deaths	Death Rates AFDC ²	Death Rates Non-AFDC ^{3,4}	Total ^{4,5}		AFDC ²	Death Rates Non-AFDC ^{3,4}	Total ^{4,5}		AFDC ²	Death Rates Non-AFDC ^{3,4}	Total ^{4,5}
All Ages 28 Days to 17 Years	172	152.3*	59.8	66.2	47	198.7*	57.3	60.2	125	140.0*	66.5	79.7
28 Days to 1 Year	70	1027.6*	389.7	443.0	19	1434.0*	335.6	361.5	51	929.5*	539.2	623.7
1-17	102	96.1*	42.8	46.4	28	125.4*	42.9	44.6	74	88.3*	42.5	50.6
1-4	42	135.7*	53.2	61.0	8	123.7	50.6	52.7	34	138.9*	60.3	79.1
5-9	17	52.9*	26.3	28.2	6	84.5	26.2	27.6	11	43.9	26.1	29.4
10-14	18	63.2*	28.4	30.5	5	81.6	27.3	28.3	13	58.2	31.4	35.6
15-17	25	172.1*	76.5	80.9	9	341.0*	80.8	83.9	16	134.6*	64.4	73.6

*The difference between AFDC and non-AFDC death rates is more than twice the standard error of the difference between the two rates. Thus, the difference is statistically significant.

¹Deaths to children enrolled in Aid to Families with Dependent Children Program. ²Deaths per 100,000 AFDC children enrolled January 20, 1982. Deaths 28 days to one year are per 100,000 children under age one. ³Deaths per 100,000 population on January 1, 1982 not enrolled in AFDC on January 20, 1982. Deaths 28 days to one year are per 100,000 neonatal survivors under one year less children under one year enrolled in AFDC on January 20, 1982. ⁴Population estimates for 1981 and 1982 were averaged to obtain January 1, 1982 estimates, assuming the 1980 age distribution in order to estimate persons 15-17. ⁵Deaths per 100,000 population. Deaths 28 days to one year are per 100,000 neonatal survivors under one year.

Table 6 provides cause-specific death rates by race for AFDC children in two age groups. While fraught with the statistical problem of small numbers of deaths, these rates may reveal certain important contrasts with the general population. These would include:

- Among AFDC infants, the SIDS rate for whites (754.7) was over twice that for nonwhites (309.8), while in the general infant population (Table 2), the nonwhite SIDS rate (282.5) was twice the white rate (137.8). The AFDC race difference is not statistically significant, however.

- Among AFDC children 1-17 years, accidents were the leading cause of death with the motor vehicle rate higher among whites and the non-motor-vehicle rate higher among nonwhites. These patterns are consistent with those in the general population, but the AFDC child appears at particular risk of death by non-motor-vehicle accident, especially death by fire.
- Based on these small numbers of deaths, the AFDC white child appears at increased risk of death from cancer, and the AFDC nonwhite child appears at increased risk of death by homicide, relative to their non-AFDC counterparts.

Table 6

FY 1982 Deaths and Death Rates for Leading Causes by Race and Age

North Carolina AFDC Children¹

Age and Cause of Death ²	Total		White		Nonwhite	
	No.	Rate ³	No.	Rate ³	No.	Rate ³
28 Days - 1 Year						
Sudden Infant Death Syndrome ⁴	27	396.4	10	754.7	17	309.8
Perinatal Conditions ⁵	6	88.1	2	150.9	4	72.9
Congenital Anomalies ⁶	5	73.4	1	75.5	4	72.9
Heart Disease ⁷	5	73.4	1	75.5	4	72.9
1-17						
Accidents	49	46.2	11	49.3	38	45.4
Motor Vehicle ⁸	23	21.7	7	31.3	16	19.1
Other ⁹	26	24.5	4	17.9	22	26.3
Cancer ¹⁰	13	12.3	7	31.3	6	7.2
Homicide ¹¹	12	11.3	2	9.0	10	11.9
28 Days - 17 Years						
Accidents	52	46.1	11	46.5	41	45.9
Motor Vehicle ⁸	23	20.4	7	29.6	16	17.9
Other ⁹	29	25.7	4	16.9	25	28.0
Fires ¹²	12	10.6	2	8.5	10	11.2
Drowning ¹³	6	5.3	2	8.5	4	4.5
Sudden Infant Death Syndrome ⁴	27	23.9	10	42.3	17	19.0
Homicide ¹¹	14	12.4	2	8.5	12	13.4
Cancer ¹⁰	13	11.5	7	29.6	6	6.7
Congenital Anomalies ⁶	7	6.2	2	8.5	5	5.6
Heart Disease ⁷	7	6.2	2	8.5	5	5.6
Perinatal Conditions ⁵	7	6.2	2	8.5	5	5.6

¹Children whose families receive Aid to Families with Dependent Children. ²Ninth Revision International Classification of Diseases (ICD) categories; footnotes 4-13 give the ICD codes. ³Deaths per 100,000 children enrolled January 20, 1982. Deaths 28 days - 1 year are per 100,000 children under 1 year of age. ⁴798.0. ⁵760-779. ⁶740-759. ⁷390-398, 402, 404-429. ⁸810-825. ⁹800-807, 826-949. ¹⁰140-208. ¹¹960-978. ¹²890-899. ¹³910.

In addition to the determination of population-based rates, a case-control model (5) was used to assess the disproportionality of particular causes of death among AFDC decedents. Statistically significant results are given in Table 7 (see explanation in footnote 1 of the table). Here, AFDC decedents are found less likely than non-AFDC decedents to have died from congenital malformations (postneonatal deaths) and from motor vehicle accidents (ages 1-17) but more likely than non-AFDC decedents to have died from homicide and non-motor-vehicle accidents (ages 1-17). Also, AFDC white decedents ages 1-17 were more likely than their non-AFDC counterparts to have died from cancer. Results for SIDS were not statistically significant. While these findings are of interest, the matter of competing risks precludes the kind of straightforward interpretation inherent in population-based rates.

Discussion

The goal of public health research is the reduction of premature morbidity and mortality including that associated with violence. Thus, the Surgeon General (6) has established several national objectives that focus on mortality at young ages. They include the following (with 1982 N.C. rates added for comparison):

- By 1990, the **infant mortality rate** should be reduced to no more than 9 deaths per 1,000 live births (compared with an N.C. rate of 13.7 in 1982). No county and no racial or ethnic group of the population should have an infant mortality rate in excess of 12 deaths per 1,000 live births (compared with 1982 N.C. rates of 10.9 for whites, 20.6 for blacks, and 11.9 for American Indians).

- By 1990, the **motor vehicle fatality rate** for children under 15 should be reduced to no greater than 5.5 per 100,000 children (compared with a 1982 N.C. rate of 9.1).
- By 1990, the **rate of suicide** among people 15-24 should be below 11 per 100,000 (compared with a 1982 N.C. rate of 12.9).
- By 1990, the **death rate from homicide** among black males ages 15-24 should be reduced to below 60 per 100,000 (compared with a 1982 N.C. rate of 33.8 for nonwhite males 15-24).

Although the above N.C. nonwhite male homicide rate is consistent with U.S. data showing lower rates in southern and western states than in north-central and northeastern states (7), it is nonetheless appalling that, of all N.C. nonwhite males 15-19 who died in 1982, thirty percent were victims of homicide. Concerning the infant death rate among American Indians in North Carolina, there is evidence that infants are not reported as Indian at death as often as at birth. Thus, the state's Indian rate of 11.9 may be artificially low.

For other national objectives cited above, North Carolina's 1982 rates would have to be reduced by the following amounts to meet the 1990 U.S. goals:

Infant Death Rate	34%
Blacks	42%
Motor Vehicle Death Rate under 15	40%
Suicide Rate, 15-24	15%

Table 7

Statistically Significant Odds Ratios¹ Showing Disproportionate Causes of Death Among AFDC Decedents by Age and Race North Carolina, FY 1982

Age	Cause of Death	Race	Total Number OF Deaths ²	Estimated Odds Ratio ³
28 Days—1 Year 1-17	Congenital Anomalies ⁴ Motor Vehicle Accidents ⁵ Non-Motor-Vehicle Accidents ⁶	Total	56	0.4
		Total	236	0.6
		Total	141	1.7
	Cancer ⁷ Homicide ⁸	Nonwhite	52	2.0
		White	47	2.6
		Total	35	2.9

¹See reference 5. The odds ratio measures the proportion dying from a particular cause if AFDC against the proportion dying from that cause if not AFDC. A ratio greater than 1 indicates AFDC decedent at greater risk of death from that cause; a ratio less than 1 indicates non-AFDC decedent at greater risk. ²AFDC and non-AFDC combined. ³The 95% confidence interval for these odds ratios did not include 1.0. ⁴ICD 740-759. ⁵ICD 810-825. ⁶ICD 800-807, 826-949. ⁷ICD 140-208. ⁸ICD 960-978.



Basically, results of the present study are consistent with those reported in the Maine study (4) wherein children enrolled in public assistance programs were found to be dying at three times the rate of other children. Since Maine has very few nonwhite residents, their results would be expected to parallel the present study's results for white youth, and they do. However, contrary to the Maine researchers' expectations—that the death rate among poor blacks is probably higher than among poor whites—the present study suggests the opposite—higher mortality among poor white children than among poor nonwhites. These results may reflect a racial difference in AFDC participation, i.e., compared to their nonwhite counterparts, North Carolina's AFDC white children may be poorer and/or otherwise more exposed to the causes of mortality. These results could also represent aberrations due to small numbers; the race differences among AFDC children were not statistically significant.

Nevertheless, based on the statistically significant results of this study as well as results from the Maine study, public health outreach and prevention measures that more specifically target children in poverty may be needed. While all such children cannot be identified, many can be—specifically, those whose families receive AFDC, food stamps, and other forms of public assistance allotted through local agencies.

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